The role of organizational and institutional factors in the formation of entrepreneurial intention of university students: A multi-level perspective

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Abstract

The aim of the study was to offer a broader understanding of entrepreneurial intention by combining individual, organizational and institutional factors. A sample of 805 undergraduate students in universities in Pakistan took part in the study. Our findings suggest that students perceived a supportive institutional environment (policies, regulations and programs run by the government). However, students seemed to perceive a lack of organizational support from their universities (educational, cognitive, and business development). At an individual level, males and females seemed to be motivated by different factors, although both showed a strong need for achievement and self-realization. We conclude that a multi-level perspective offers a more meaningful understanding of entrepreneurial intention and we offer suggestions for university management and policy-makers geared toward enhancing entrepreneurship.

Introduction

The motivations and inspirations behind an individual's entrepreneurial intention have received increased academic attention (Carter et al. 2003; Zellweger et al. 2011; Laspita et al. 2012). In today's increasingly competitive and growth-oriented world, entrepreneurship is considered one of the best strategies to enhance a country's economic development and to achieve sustainable competitiveness (Schaper and Volery 2004; Venkatachalam and Waqif 2005). Through entrepreneurial activities, several countries have been able to generate wealth, improve firm survival rate, enhance technological change adoption, and create job opportunities (Gurol and Atsan 2006; Lena and Wong 2003). Thus, entrepreneurship can be considered as the engine driving many nations' economic growth and competitiveness (Scarborough and Zimmerer 2003; Kuratko and Hodgetts 2004). As a result, entrepreneurship has emerged as one of the most popular topic among scholars, students and policy makers and is becoming an emerging disciplinary field (Chuluunbaatar et al. 2011; Davidsson and Wiklund 2001).

In today's highly competitive job environment with limited opportunities, both undergraduate and graduate students are interested in studying entrepreneurship (Dickson et al. 2008; Solomon 2002) because the wage employment or permanent employment is not guaranteed in organizations (Collins et al. 2004; Kamau-Maina 2006; Postigo et al. 2006). Furthermore, the premise that university graduates are the elite and the intelligent group in society who can easily acquire a job upon graduation, no longer reflects the realities of today's employment market (Seet and Seet 2006).

This study attempts to fill this gap in the literature by employing a multilevel design. Multilevel theory and methods support the modeling and analysis of effects of higher-level variables on relationships between lower-level variables (e.g., the effect of organizational and institutional factors on the relationship between individual level factors and entrepreneurial intention development). Multilevel methods provide a number of statistics that help researchers judge the significance and meaningfulness of these effects, including the parsing of explained variance across levels of analysis and the extent of between-group variance in lower-level relationships.

Many scholars have primarily focused either on individual-level, organizational-level, or institutional-level factors to measure entrepreneurial intention. However these three streams of research have evolved in relative isolation and have not been compared collectively within a multi-level perspective. For example, research often examines how relationships between individual level factors which includes; demographic characteristics, the status of parents and grandparents, role models, self-efficacy, locus of control, need for achievement, need for independence, entrepreneurial experience and programss, personality traits and subjective norms, to shape entrepreneurial intention while at organizational level factors it includes; organizational culture and organizational norms (Louis, Blumenthal, Gluck, and Stoto 1989), university quality (Di Gregoria and Shane 2003), and the impact of entrepreneurship education on students' entrepreneurial intention (Souitaris et al. 2007), and at institutional level

researchers have focused on economic stability (Harper 1998; McMillan and Woodruff 2002), capital availability (de Bettignies and Brander 2007; Shane 1996), and reduced personal income taxes (Gentry and Hubbard 2000) as the most important factors for entrepreneurial development among other factors. What is missing is a study that considers how individual shape entrepreneurial intention and behavior can be explained in terms of the organization and institutional -level variable (e.g., educational support and structural support). Although these three different levels might interact with each other to synergize entrepreneurial intention, most investigators have treated them independently, rather than considering the effects of their potential interrelations and interdependency. A multilevel design will contribute to our understanding of entrepreneurial intention development process by testing not only the relationship between individual level factors and intention, but also the degree to which organizational level and institutional level factors, both directly affects the level of entrepreneurial intention as well as moderate the relationship between individual level factors and entrepreneurial intention development. The multilevel data analysis approach provides a more detailed perspective of the underlying processes, which can in turn help explain inconsistencies in the literature regarding how feasibility level (organizational level, institutional level and self-efficacy) influences the relationship between perceive desirability level (need for achievement, independence, financial success, self-realization, social norms, innovativeness and risk taking propensity) and entrepreneurial intention.

In summary, our multi-level study extends the literature as it acknowledges the important but neglected influence of organizational-level and institutional-level factors on entrepreneurial behavior, thus helping to resolve some of the controversies in previous research (Gartner et al. 1992). In testing our research propositions, we use hierarchical linear modeling (HLM) to avoid estimation errors associated with traditional regression models (Bommer et al. 2007; Marrone et al. 2007; Martin 2007). Our findings will help university managers and country

policy-makers to understand the effectiveness of current initiatives taken to stimulate academic entrepreneurship.

Our first contribution is to extend the entrepreneurship literature by introducing a multi-level perspective of individual, organizational, and institutional factors to understand the entrepreneurial intention of university students. Second, following Shapero and Sokol (1982), we have examined the impact of perceived desirability and perceived feasibility on entrepreneurial intention through ordinary least square (OLS) regression. At the perceived desirability level, we have used seven factors which differentiate individuals on the basis of how they discover, evaluate, and exploit entrepreneurial opportunities and includes; need for achievement (Collins et al. 2004), need for independence (Douglas and Shepherd 2002), financial success (Carter et al. 2003), self-realization (Carter et al. 2003), social norms (Elster 1989), innovativeness (Schienberg and MacMillan 1988; Shane et al. 1991; Carter et al. 2003) and risk-taking propensity (Stewart and Roth 2001). Perceived feasibility is measured by three factors: entrepreneurial self-efficacy (Chen et al. 1998), perceived university support and perceive institutional support. Perceived university support considers students' perception of their university's support, which includes: educational support, cognitive support, and business development support (Kraaijenbrink et al. 2010). At the institutional level, we measured perceived institutional support, which refers to the policies, regulations and programs run by governments of a country to support entrepreneurship (Turker and Selcuk, 2009). Specifically, we are studying the role of organizational-level and institutional-level factors in influencing students' entrepreneurial intention while controlling for individual-level factors. We have selected the relevant variables through an extensive review of 85 studies, applying the following selection criteria: (a) variables have shown heterogeneity in their relationship with entrepreneurial intention in many cases, (b) variables have a history of their usage in the literature with well-defined structure and theories, (c) variables are consistently used for

student specific population, (d) variables have high reliability and validity in past literature, and (e) variables are independent from each other (see Appendix I, II and III).

Different studies conducted by *Small and Medium Enterprises Development Authority* (SMEDA), Global Entrepreneurship Monitor (2010), International Labor Organization (2011) and World Bank Entrepreneurship Survey (2010) found a correlation between a country's per capita GDP, national economic growth rate, and the level and type of entrepreneurial activity in the country. This indicates that an individual's entrepreneurial intention is a reflection of the economic potential, political stability, and economic environment of the country. The Global Employment Trends for Youth (2011) highlighted the statement made by the International Labour Organization (ILO) which indicated that the recent global economic crisis has led to a *substantial* increase in youth unemployment rates, which has reversed the earlier favorable trends observed during the past decade. The new economic environment's realities reflect the frustration and anger that 4.5 millions of currently unemployed young individuals around the world are feeling. Therefore, our second contribution is to provide an understanding of these issues in order to facilitate the development of institutional-level and organizational-level strategies. Our third contribution is to extend our understanding of entrepreneurial intention in the context of developing countries[1].

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[1] Authors has conducted review of literature between year 2000 to 2012 and out of 85 most relevant papers only few has addressed the developing part of the world and none of them has addressed Pakistan (See Appendix III).

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Multilevel Modeling

Perhaps one of the most widely used methodologies in multilevel research is hierarchical linear modeling (Raudenbush and Bryk 2002). This statistical method differs from ordinary least squares (OLS) regression by its ability to model "cross-level" effects between variables from different levels of analysis (e.g., how "individual-level" perceptions are affected by "organization-level" characteristics).

In the parlance of multilevel modeling, the individual- and organization and institutional-level variables are categorized as "level-1" and "level-2" variables, respectively. Two of the most important types of effects analyzed by hierarchical linear modeling concern cross-level effects. The first type concerns "direct" effects of higher-level variables on lower level dependent variables. These effects are measured by treating the level-1 intercept as an outcome variable regressed upon level-2 independent variables.

The second type is often called "rate-of-change" or "moderating" effects. These effects are measured by treating the level-1 coefficients, or "slopes," as outcome variables regressed on level-2 independent variables. Though it goes against the common prohibition of incorporating variables from different levels of analysis into the same model, multilevel modeling and its analytical methods have been used successfully for several decades in education (e.g., Singer and Willett 2003; Raudenbush and Bryk 2002; Bryk, Lee, and Holland 1993) and are finding increased acceptance in management research (e.g., Ang, Slaughter, and Ng 2002; Klein and Kozlowski 2000; Klein, Tsoi, and Cannella 1999).

Multilevel theory and methods have been rarely used in entrepreneurial intention measurement research. They are also gaining popularity among management researchers, as evidenced by the offering of hierarchical linear modeling workshops at both the 2005 and 2006 Academy of Management meetings (e.g., Hofmann 2006). However, there is a striking absence of

multilevel research in both the entrepreneurship literature in general and the intention literature in particular. Thus, the purpose of our study is not only to highlight the described theoretical contributions, but also to show how multilevel theory is particularly suited for entrepreneurial intention measurement research. Indeed, the entrepreneurial intention literature seems to be an extremely fruitful area for multilevel research because individual-level processes of entrepreneurial intention development and organizational and institutional-level influences create unique complexities.

Our complete multilevel research model for our study is depicted in Figure 1. It shows both, the individual level variables as perceive desirability and Organizational, institutional-level variables and self-efficacy as perceive feasibility level variables. We will describe both levels of analysis in more detail in the subsequent sections.

Theoretical Framework

Entrepreneurial Intention: Perceived Desirability and Perceived Feasibility Interaction

Entrepreneurship is the process of venture creation (Gartner et al. 1992) and entrepreneurial intention is crucial in this process as they can be strong indicators of behavior. Behavioral intention captures the degree to which people show their motivations and willingness to execute the desired behavior (Ajzen 1991; Fishbein and Ajzen 1975). Intention is defined as a state of mind that directs a person's attention (and therefore experience and actions) towards a specific object (goal) or path in order to achieve something (becoming entrepreneur) (Bird 1988; Bird and Jelinek 1988; Katz and Gartner 1988).

Previous research has proposed several conceptual models for understanding entrepreneurial intention (Shapero and Sokol 1982; Bird 1988; Krueger and Carsrud 1993; Krueger and Brazeal 1994; Davidsson 1995; Reitan 1996; Autio 1997; Douglas and Shepherd 2002). However, as research has shown, there is little difference in the approach taken by these models (Peterman and Kennedy 2003; Krueger, Reilly, and Carsrud 2000). Our understanding

of entrepreneurial intention is guided by two models: Azjen's (1991) theory of planned behavior (TPB) and Shapero and Sokol's (1982) model of intention in entrepreneurial event (SEE). Although both models vary in terms of their underlying concepts, they provide comparable interpretations of entrepreneurial intention (Krueger et al. 2000; Kolveried et al. 2007; Engle et al. 2010; Moriano et al. 2011). Krueger et al. (2000) demonstrated that attitudes and subjective norms in the TPB model are conceptually related to perceived desirability (perceptions of the personal appeal to start a business) in SEE, while perceived behavioral control in TPB corresponds with perceived feasibility (degree to which one feels capable of doing so) in the SEE model. Essentially, perceived desirability and perceived feasibility are fundamental elements of entrepreneurial intention (Douglas and Shepherd 2002).

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Interaction of perceived desirability and perceived feasibility Expectancy theory (Vroom, 1964) suggests that an individual will act in a certain way based on the expectation that the act will be followed by a given outcome (expectancy) and on the attractiveness of the outcome to that individual (value or valence). Steel and Konig (2006) suggest that behavioral intentions models bear close similarity to expectancy-valence models and that expectancy theory can be assimilated into the Theory of Planned Behavior (TPB) framework (Ajzen, 1991). Indeed, they further suggest that Bandura (2002) integrates the TPB into the traditional expectancy framework. Steel and Konig (2006) suggest that self-efficacy theory is closely related to expectancy if not identical in some respects. In addition, they note that Gollwitzer (1996) states that "preferences are established by employing the evaluative criteria of feasibility and desirability." Thus, feasibility is related to expectancy and desirability is a form of value (Steel and Konig (2006)). The expectancy model assumes a multiplicative relationship between expectancy and valence. Individuals considering a course of action estimate firstly the probability that the outcome will be achieved and secondly the value of the expected outcome.

The components of expectancy and value are then multiplied together and the action that is appraised as having the largest expected value is the one most likely to be pursued (Steel and Konig (2006)). Prior research in other contexts has found empirical evidence validating this multiplicative relationship between expectancy and value (e.g. Arnold, 1981). The relatedness of the TPB and expectancy frameworks suggests that interaction effects might be expected in the context of entrepreneurial intentions. Indeed, a number of behavioral science studies outside the entrepreneurship domain have found support for such an interaction effect between factors related to perceived feasibility and perceived desirability (e.g. Bandura, 2002; Conner and McMillan, 1999; Eagly and Chaiken, 1993; Eccles et al., 1983; Feather, 1988; MacIver et al., 1991). These indicate that it seems likely that entrepreneurial intentions are, in the general case, not only a function of the main effects of perceived feasibility and perceived desirability but also a function of the interaction between these factors. Greater understanding of these observed interactions is offered by regulatory focus theory (Higgins, 1987, 1998; Shah and

Higgins, 1997), which suggests that individuals regulate their behavior by adopting one of two perspectives in order to achieve desired ends (Baron, 2004). One of these perspectives is a promotion focus, where the ultimate goal sought by individuals is accomplishment of positive outcomes. The second is a prevention focus, where the goal sought by individuals is safety, and where negative outcomes are to be avoided. Promotion- and prevention-focussed self-regulation differ depending on the underlying motives people are trying to satisfy, the nature of the goals they are trying to attain, and the types of outcomes salient to the individual (Brockner et al., 2004).

Individuals are likely to differ in their predisposition to promotion focus and prevention focus (Liberman et al., 1999), with differences in chronic (or dispositional) regulatory focus for a variety of reasons (see for example Higginsand Silberman,1998). The regulatory focus of individuals can also differ according the situation with which they are confronted (Liberman et al., 1999). Consequently, an individual's regulatory focus orientation can depend on both

dispositional and situational factors (Baron, 2004; Brockner et al., 2004). Shah and Higgins (1997) considered the impact of regulatory focus in an expectancy framework and suggested that the interaction effects between goal expectancy and goal value would be positive for individuals with a promotion focus and negative for individuals with a preventative focus. Their study found empirical evidence confirming these effects in the context of experiments on university students which included experiments designed to manipulate an individual's regulatory focus by framing a choice situation in terms of either prevention or promotion, thus confirming that situational contexts may induce individuals to adopt a particular regulatory focus. Regulatory focus theory has also recently been applied to the entrepreneurial process (Brockner et al.,2004)which argue that both promotion and prevention regulatory focus orientations are important for entrepreneurial success, but that different regulatory focus orientations might be advantageous at different stages of the entrepreneurial process. For example, they suggest that a promotion focus may be advantageous during the idea-generation stage of the entrepreneurial process, when multiple alternatives and novel solutions would be potentially desirable, and individuals adopting a promotion focus would be more inclined to consider novel solutions to problems.

In contrast, a preventative focus is expected to better serve the individual when screening a venture idea (Brockner et al., 2004). Having recognized an entrepreneurial opportunity, the individual undertakes viability screening and at some point in this entrepreneurial process the individual's thought processes coalesce from a vague notion that entrepreneurship might be a good idea to a firm intention to act entrepreneurially (Choi et al., 2008; McMullen and Shepherd, 2006). In the context of the particular (situational) opportunity, individuals must decide whether they believe they possess the necessary skills and abilities required to be successful in this particular entrepreneurial situation (i.e. feasibility), but also whether the desirability of the entrepreneurial option is greater than for alternative career options (Douglas and Shepherd, 2000). Given that the risks associated with entrepreneurship

are widely recognized, we contend that in both viability screening and in forming the intention to act entrepreneurially, the individual will be cautious about making mistakes and in such situations will tend to be oriented towards a prevention focus. Thus, when considering the intention to act entrepreneurially we expect a similar response to that of the screening process, where attention is drawn to the ways in which ventures can fail and which, as suggested by Brockner et al. (2004), is consistent with a prevention-focused orientation. Therefore, when forming the intention to act entrepreneurially, we expect the situational aspects to induce individuals who are in the process of forming entrepreneurial intentions to adopt a prevention focus. Consequently, we offer the following hypothesis:

H1. Perceived feasibility and perceived desirability will have a negative interaction effect in the formation of entrepreneurial intentions.

Individual factors affecting entrepreneurial intention (more discussion needed)

In explaining the differences between entrepreneurs and non-entrepreneurs, entrepreneurs are characterized as being more achievement-orientated (Collins et al. 2004), more risk-tolerant (Stewart and Roth 2004), more independence-seekers (Douglas & Shepherd 2002), more willing to be introduced to new products and services and to create new firms or new material by destroying the existing economic order (Schumpeter 1934), more able to identify new opportunities (Thompson 1999), and more creative (Lee and Wong 2004). Although the definitions of an entrepreneur differ in their description, there is a consensus that an entrepreneur has a unique character, mindset, motivation, vision, and is committed to conceptualize ideas and implement them through a business plan and can see changes as opportunities to create innovation (Cheng et al. 2009). This discussion implies that entrepreneurs are a function of their personality traits and thus they are born rather than made as a result of training and teaching. According to this argument, the entrepreneurs' specific character depends on their personal background, previous experience, and environmental

influences, which are not transferable from one to another. Hence there is less possibility that entrepreneurship can be taught.

H1: When students perceive high entrepreneurship desirability, they will be more likely to develop an entrepreneurial intention.

Organizational (university) factors affecting entrepreneurial intention

However, social science research expects a more holistic view to explain phenomena by taking into account the interactions of various factors, rather than considering the impact of a single factor. Research has emphasized that even if individual-level factors have some impact on entrepreneurial intention, it may be better to consider the impact of some contextual factors (Turker and Selcuk 2009). Previous literature has shown a significant relationship between education, training and entrepreneurship (Galloway and Brown 2002; Henderson and Robertson 2000). Furthermore, a significant amount of scholarship has considered universities as seedbeds for fostering entrepreneurial spirit and culture as they can play an important role in identifying and developing entrepreneurial traits among students and making them capable of starting their own venture, thus effectively contributing to economic prosperity and job creation (Debackere and Veugelers 2005; Mowery et al. 2004; O'Shea et al. 2005; Binks et al. 2006). Research shows that university students who took entrepreneurship as a course have greater interest in becoming entrepreneur as compared to others who did not take it (Kolvereid and Moen 1997). Furthermore, Upton et al. (1995) found that 40 per cent of those who attended entrepreneurship courses had started their own businesses.

Entrepreneurial universities are valued because of their economic outputs (such as patents, licenses, and start-up firms) and technology transfer mechanisms (Tijssen 2006). It is therefore important for universities to position themselves as hub of entrepreneurship by nurturing an entrepreneurial environment and contributing substantially to the economy and the society (Gnyawali and Fogel 1994). The development of entrepreneurial universities constitutes a

widespread phenomenon across the world, which has attracted policy makers' attention. However, despite the increasing interest in academic entrepreneurship and new venture creation by students, very little empirical research has identified organizational-level factors that can foster entrepreneurial intention among university students (Walter et al. 2006).

It has been observed that people avoid careers and environment that they believe do not fit with their competencies and tend to select those that best match their abilities. In this situation an individual's entrepreneurial self-efficacy, which refers to the belief in one's own abilities to perform various skills necessary to pursue a new venture opportunity, plays an important role (Chen et al. 1998). Recent research has shown that entrepreneurial self-efficacy has a significant impact on entrepreneurial intention and behavior (McGee et al., 2009; Vázquez et al., 2009; 2010; Townsend et al., 2010). This implies that entrepreneurial self-efficacy and entrepreneurial intention can be enacted through educational infrastructure and university support (Segal et al. 2007; Vázquez et al. 2010; 2011). Along the same lines, Wang and Wong (2004: p. 170) pointed out to the fact that the entrepreneurial dreams of many students are hindered by inadequate preparation "...their business knowledge is insufficient, and more importantly, they are not prepared to take risk to realize their dreams". Therefore it can be inferred that academic institutions play an important role in fostering entrepreneurial behavior. Research has proven the positive and significant relationship between entrepreneurship education and entrepreneurial behavior (Charney and Libecap 2000; Lüthje and Franke 2003; Galloway and Brown 2002). However, while the number of entrepreneurship courses and curricula has grown in recent years, student entrepreneurship remains low (Kraaijenbrink et al. 2010). Therefore, we propose:

H2: When students perceive the university environment as entrepreneurship-supportive, they will be more likely to develop an entrepreneurial intention.

Institutional factors affecting entrepreneurial intention

Individuals do not exist in isolation and many environmental factors may affect their entrepreneurial behavior. Public or private sector institutions determine the "rules of the game" for organizations in a country and their framework determines which specific skills and knowledge will result in the maximum payoff (North 2005). While public institutions create laws, regulations and policies for innovation and for promoting entrepreneurship, private institutions define culture, norms, belief, and expectations (Ingram and Silverman, 2002). Both are important for entrepreneurial development because they always aim at innovation and development (Aldrich and Fiol 1994; Scott 1995). Research has shown a significant impact of the institution's structural factors on a new venture creation and in determining new directions for entrepreneurship activity and economic development (Shane 2004; Sobel 2008). The relationship between economic growth and entrepreneurial activity is significant and understood through capital availability (de Bettignies and Brander 2007), economic stability (McMillan and Woodruff 2002), and reduced personal income taxes (Gentry and Hubbard 2000); and these are all positively associated with new venture creation. Research has shown that when individuals perceive a hostile institutional environment for new venture creation (e.g., credit conditions that are too restrictive or the legitimacy of entrepreneurship seems insufficient), they will be less willing to become entrepreneurs irrespective of their attitude toward self-employment (Luthje and Franke 2003; Schwarz et al. 2009; Turker and Selcuk 2009). Therefore, we propose:

H3: When students perceive the institutional environment as entrepreneurship-supportive, they will be more likely to develop an entrepreneurial intention.

Figure I

Interaction of Perceive Feasibility and Desirability

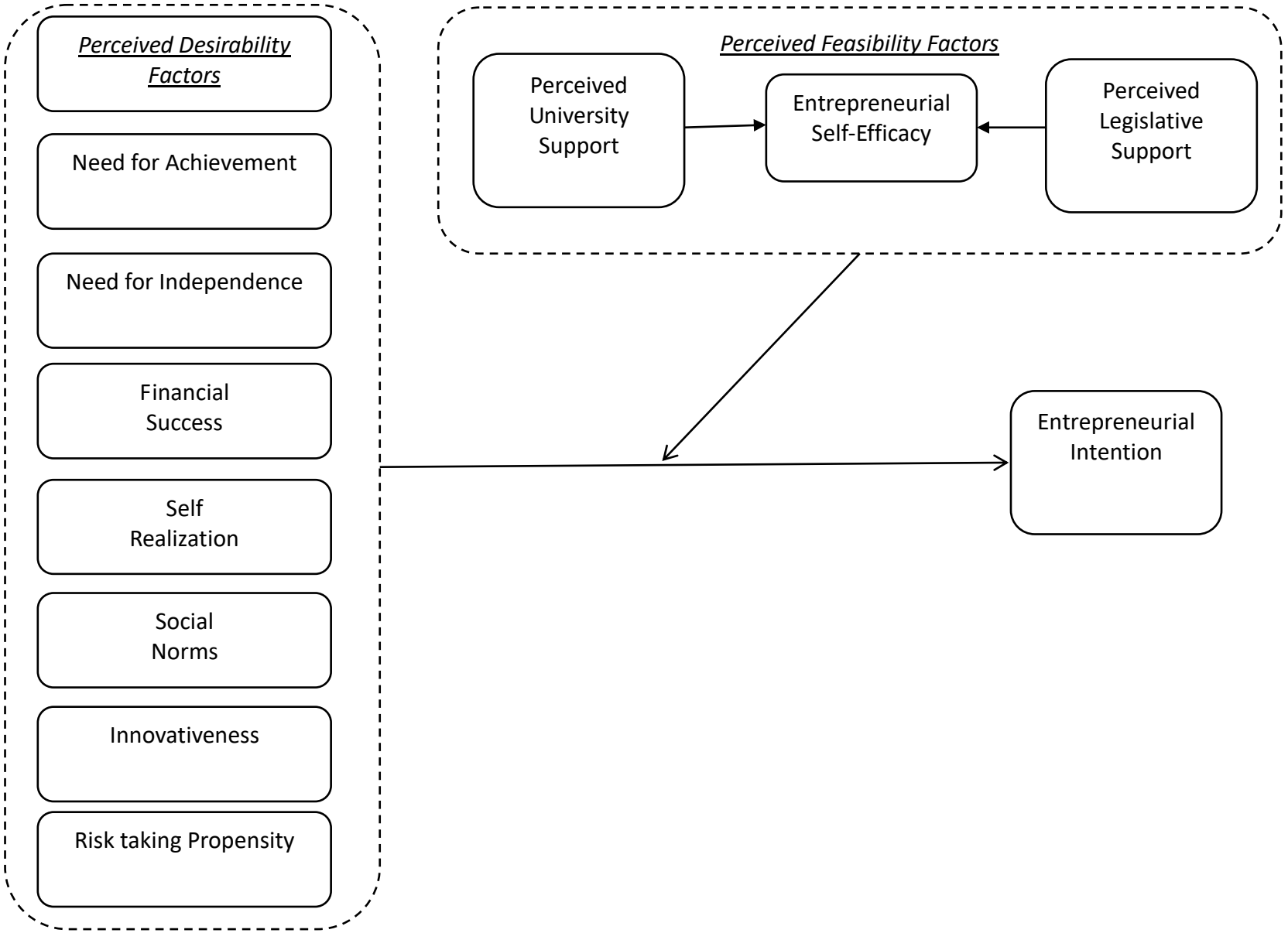
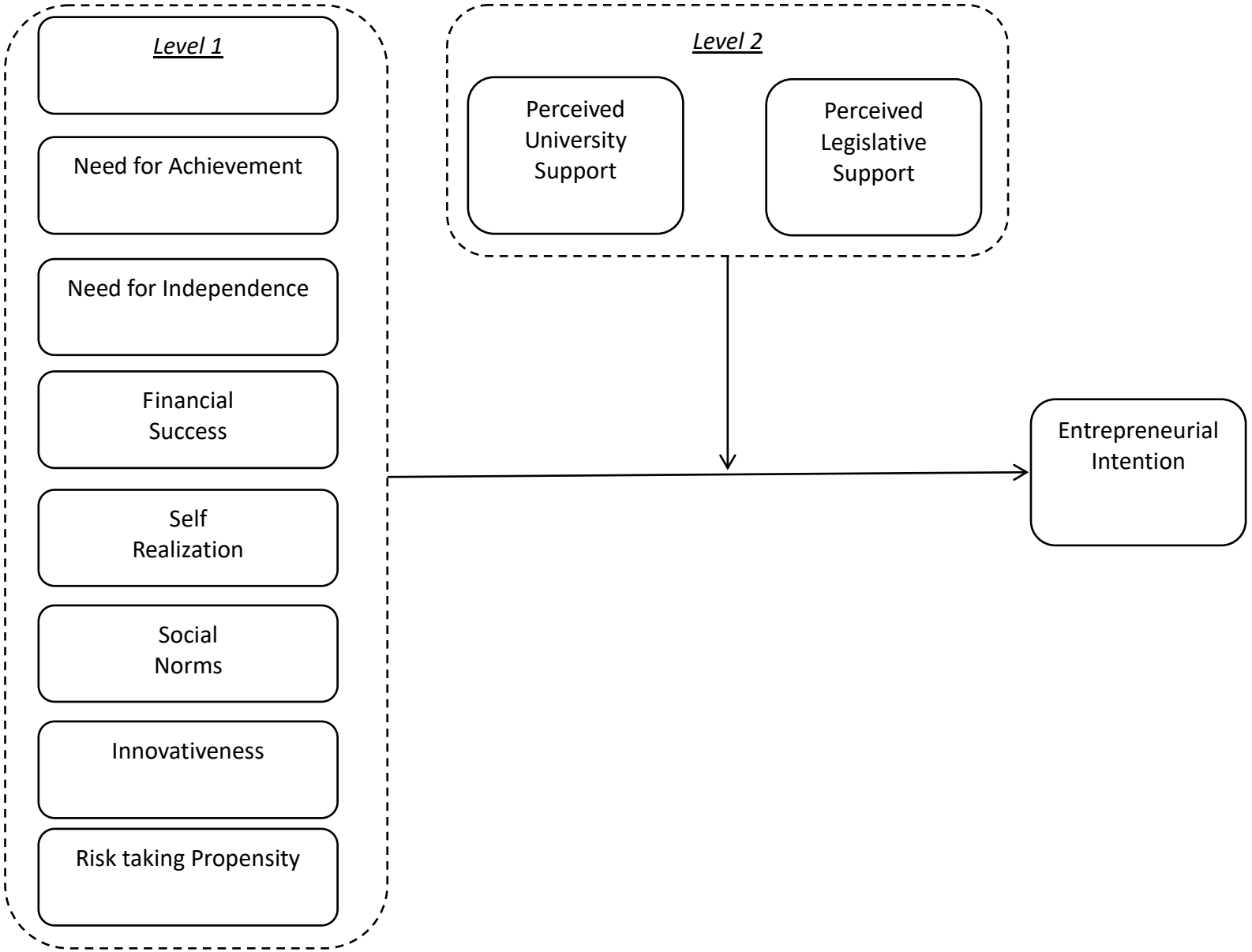


Figure II

Multilevel Process for Individual Self-employment Intention



Method

Context of the research

During the last decade, Pakistan, has been trying to build its economic growth based on educational policies. The Higher Education Commission (HEC) of Pakistan has recently developed the National Business Education Accreditation Council (NBEAC) to promote business education focusing on stimulating entrepreneurial education and culture in Pakistani universities. Entrepreneurship is generally selected by students as an elective subject during the final semester of their undergraduate programs. However, the NBEAC aims now at stimulating entrepreneurship as a major field of study in higher education institutions. Pakistan provides a favourable environment for our research, because of the increasing focus on entrepreneurship education, which will allow us to measure the impact of the new initiatives on university students' entrepreneurial intention.

Sample and procedure

To ensure variability and representativity of respondents we selected universities in the largest province of Pakistan, Punjab. In Punjab we targeted Lahore, Faisalabad and Sahiwal, considered the educational hub in this region. First, we selected five universities on the basis of their provision of entrepreneurship education (by looking at their websites and reviewing their course outlines) and whether they were registered with HEC with approved relevant programs of study. Second, we contacted undergraduate students who had studied or were studying a course of entrepreneurship in the universities that agreed to participate in our study.

One thousand questionnaires were distributed and 850 were returned, of which 45 were subsequently discarded. The final sample consisted of 805 participants. Of these, 547 were males (68%) and 258 females (32%). The average age was 21 years (SD = 0.54).

Measurement Variables

Table 1 presents the scales used to measure the main variables. All the constructs used a 5-point Likert scale response that ranged from strongly disagree (1) to strongly agree (5), unless otherwise indicated.

---INSERT TABLE 1 ABOUT HERE---

Entrepreneurial Intention. We measured entrepreneurial intention with seven statements to assess whether participants intended to start a new business. The first statement, "Have you ever seriously considered becoming an entrepreneur?" was adapted from Veciana et al. (2005) and was measured on a dichotomous scale of "yes/no". The other six statements were measured on a five-point Likert scale ranging from 1 ("strongly disagree") to 5 ("strongly agree") and were adapted from Linan and Chen (2009).

Perceived Organizational Support. Universities play a major role in fostering entrepreneurship around the world and in every region and it is important to measure the effectiveness of their support in the context of motivating and developing student entrepreneurs. Kraaijenbrink et al. (2010) defined perceived university support as the students' perception of support given by their university. We used the scale of 13 items developed by Kraaijenbrink et al. (2010) to measure the student's perception of university support on the following three dimensions: educational support, conceptual or cognitive support, and business development support.

Perceived Institutional Support. Entrepreneurial activities are mainly shaped by the economic and political actors in the public, private, and non-governmental sectors. We measured perceived structural support through a four-item scale developed by Turker and Selcuk (2009). The questions were related to the opportunities provided to entrepreneurs such as: economic stability, ease or difficulty in taking loans from banks, and the legal constraints of running a business in Pakistan.

Control Variables. We controlled for the following eight individual-level influences:

a) *Need for achievement*, which refers to an individual's expectations of doing something better or faster than anybody else or better than the individual's own earlier accomplishments

(Hansemark 2003). Individuals who are motivated by a need to achieve are more likely to choose entrepreneurial careers because this provides them with challenging activities that are associated with achievement (Collins et al. 2004). We employed a formative measure developed and validated by Cassidy and Lynn (1989).

b) *Need for independence* or autonomy is one of the important characteristics of entrepreneurs and is considered a strong reason for starting one's own business (Kolvereid 1996). Carter et al. (2003) defined independence as an individual's desire for freedom, control, and flexibility in the use of one's time. We adopted a formative measure of this construct developed and validated by Carter et al. (2003).

c) *Risk taking propensity* is a behavior influenced by an individual's personality traits, nature of the task, cognitive and situational factors, and the tendency to avoid risks while making decisions (Sitkin and Pablo 1992). Previous research has shown that an entrepreneur takes more risks than others in his/her circles (Stewart and Roth 2004). The scale is comprised of two items adopted from Zhao et al. (2005). High scores represent the extent to which an individual is willing to partake in events that have uncertain outcomes and for which the consequences of failure are significant.

d) *Self-realization* refers to the reasons involved with pursuing self-directed goals. We measured self-realization through the three-item scale from Carter et al. (2003).

e) *Financial success* involves the reasons that describe an individual's intention to earn more money and achieve financial security (Carter et al. 2003). We measured financial success through the three-item scale from Carter et al. (2003).

f) *Social norms* describe an individual's intention to have status, approval, and recognition from their family, friends, and community (Schienberg and MacMillan 1988; Shane et al. 1991; Birley and Westhead 1994). This variable was measured through two items from Carter et al. (2003).

g) *Entrepreneurial self-efficacy* was measured using a task-specific scale. Respondents were asked to indicate their degree of certainty on 26 roles and tasks related to five main areas of entrepreneurship: marketing, innovation, management, risk taking, and financial control (Chen, Greene, and Crick. 1998).

h) *Innovativeness* is defined as tendency to be creative in thoughts and actions; its basic purpose is to capture innovation, creativity, and initiative behaviors, which are characteristics of entrepreneurs (McClelland 1987; Fernald and Solomon 1987; Hornaday and Aboud 1971; Timmons 1978). We have used The Jackson Personality Inventory Manual (JPI) to measure innovativeness among young students. This instrument has its correlates described as imaginative, inventive, enterprising, original, resourceful, and farsighted (Jackson 1994). For this study we adapted 8 items from JPI innovativeness scale.

A high score on the JPI innovativeness scale indicates a preference for novel solutions to problems and an appreciation for original ideas. For this study, 8 items were adapted from the JPI innovativeness scale. Typical of these are statements such as "I often surprise people with my novel ideas" and "I like to experiment with various ways of doing the same thing."

Analysis

Means, standard deviations, Bivariate Pearson correlation coefficients, and Cronbach's coefficient alphas for all variables are shown in Table 2. The bivariate relationships indicate that all the independent variables related significantly to entrepreneurial intention. The variables most significantly related to students' entrepreneurial intention were the individual factors of need for achievement (r = 0.81: $p < 0.01$) and entrepreneurial self efficacy (r = 055: $p < 0.01$). Eentrepreneurial intention was also significantly correlated with other control variables, the associations ranged between -0.10 to 0.81. In addition, entrepreneurial intention had a moderate but significant correlation with perceived university support (r = 0.30: $p <$

0.01) and a weak but significant correlation with institutional support (r = 0.16: p < 0.01). In addition, the eight control or individual-level variables were not highly correlated to each other. Similarly, the organizational-level variables: perceived university support and relational support were not highly correlated with entrepreneurial intention but they were significant at the 1% level. The correlation coefficients among all other variables were all below 0.60 (Kennedy, 1992) and none of the variance inflation factors (VIFs) for the variables was greater than 2, which was below the guideline of 10 by Chatterjee and Price (1991). Thus, it was unlikely that multi-collinearity among the independent variables affected the findings.

---INSERT TABLE 2 ABOUT HERE---

For validity analysis, Chandler and Lyon (2001) have proposed different validation procedures. Content validity was carefully considered while choosing and operationalizing the constructs of the study. Care was taken to ensure that items were both relevant and representative of the construct being measured (Messick, 1988) and the opinion of expert judges was considered (Rossiter, 2002). We also examined substantive validity which is defined as the extent to which measure is judged to be reflective of or theoretically linked to a construct under study (Holden and Jackson 1979) and it refers to the convergent and discriminant validity. This was assessed using exploratory and confirmatory factor analysis as recommended by many researcher (Klein, Astrachan and Smyrnios 2005; Kreiser, Marino, and Weaver 2002; Moriano, Palací, and Morales 2006). Our sample's Kaiser–Meyer–Olkin test, which represents sample adequacy was notably high (0.92) and Bartlett's sphericity test highly was significant (p < 0.001). Finally, nomological or criterion validity was analyzed through correlation between the measures (Jarvis et al. 2003). Finally, for the reliability of the variables, Chronbach's alpha for entrepreneurial intention and the other variables were above the acceptable threshold of 0.70, except for perceived university support (α = 0.63), which indicates that the variables in the study were reliable.

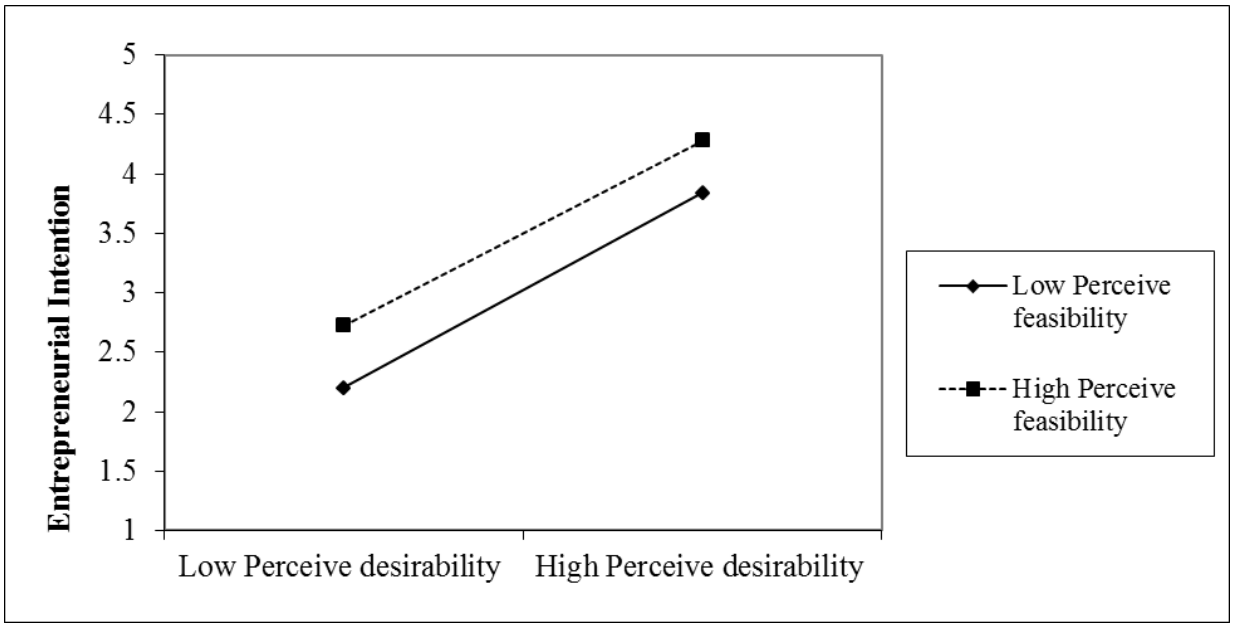
OLS Regression

OLS regression was used to assess the relationships among the control, perceive desirability and perceive feasibility variables. Following suggestions in Cohen and Cohen (1993), the effect of control variables was measured in three steps of a "stepwise" regression. The first step involved the addition of the set of level-1 control variables (i.e., age, gender, education, experience and study discipline), whereas the second step involved the addition of the perceive desirability and perceive feasibility as main effect and at third step their interaction was considered. The "controlled" effect of the predictor variables (e.g., perceive desirability and perceive feasibility) was assessed by subtracting the adjusted R^2 value of the first step from that of the second (i.e., adjusted R^2) and same for step three. We found from the OLS regressions that the step1 control variables are not meaningfully related to entrepreneurial intention, and therefore, these control variables were not used in later hierarchical linear modeling in order to simplify the analysis and interpretation of results. The OLS regressions also showed that perceive desirability and perceive feasibility are meaningfully associated with entrepreneurial intention when age, gender, and tenure are controlled (i.e., change adjusted R^2 = 0.313).

Figure III. The figure shows the interaction between perceive feasibility and desirability and its impact on entrepreneurial intention; perceived feasibility (one standard deviation above the mean) and low perceived feasibility (one standard deviation below the mean). This figure explains that individuals with lower perceived feasibility and lower perceived desirability have significantly lower entrepreneurial intentions and it increases as perceived desirability and feasibility increases.

Figure III

Perceived desirability and perceived feasibility interaction for entrepreneurial intentions



Results from OLS Regression Table, shows that individual's entrepreneurial intention to be positively related to both perceived desirability and perceived feasibility and which is consistent with previous research. In addition, and in support of our hypothesis, we found evidence of a negative interaction effect between an individual's perceived desirability and their perceived feasibility in determining the strength of their intention to be self-employed. Our this result is Consistent with McMullen and Shepherd (2006) and Fitzsimmons and Douglas (2011), which implies that, individuals with lower levels of perceived desirability may form the intention to act entrepreneurially if they perceive themselves as having sufficient perceived feasibility (or 'knowledge' in their terms) to do so. But we also find empirical evidence that individuals with strong perceptions of desirability may form the intention to act entrepreneurially even when they perceive themselves as not having the perceived feasibility (self-efficacy, university and institutional support) to do so.

Hierarchical Linear Modeling (HLM)

Hierarchical Linear Modelling, also known as random-effects model (Laird and Ware 1982), mixed linear model (Diggle et al. 1994), and random-coefficient models (Strenio et al. 1983), overcomes the shortcomings of traditional methods for analyzing hierarchical data (Hofmann 1997). First, it can help to control for clustering of observations and heteroskedasticity. Secondly, it can improve the efficiency of estimated impacts, given that the assumptions of the HLM are correct. Third, even if the assumptions are violated HLM will still produce a best "HLM" fit, similar to the Best Linear Unbiased Estimate property of an OLS model (Goldberger 1991). Fourth, a variation of the HLM model, with group mean centering, does produce unbiased slope estimates under the same conditions that are normally used to justify a Fixed Effects Model in economics.

Our study has adopted a multilevel theoretical lens and methodology as a mean to integrate existing work on entrepreneurial intention. We have considered two levels of analysis based on the hierarchical pattern in our data.

The null model. We proposed that a student's entrepreneurial intention would be associated with individual-level factors (need for achievement, need for independence, subjective norm, risk-propensity, entrepreneurial self-efficacy, self-realization, financial success, social norms, and social network support), and group-level factors (perceived university support and perceived institutional support). Therefore, a necessary precondition for the support of these propositions is that there must be significant within-group and between-group variance in entrepreneurial intention (Hofmann, 1997). We estimated this significance by computing HLM with no Level 1 and Level 2 predictors as follows:

Level 1: Entrepreneurial Intention=$\beta_{0j} + e_{ij}$

Level 2: $\beta_{0j} = \gamma_{00} + u_{0j}$

As described by Byrk and Raudenbush (1992) (see also Hofmann 1997; Hofmann et al. 2000), this model essentially forces all of the within-group variance in entrepreneurial intention into the Level 1 residual term (i.e., variance in e_{ij}) and all of the between-group variance in entrepreneurial intention into the Level 2 residual term (i.e., the variance in u_{0j}). In other words, this two-level model actually partitions the variance in entrepreneurial intention into its within-group (i.e., the Level 1 residual variance) and between-group (i.e., the Level 2 residual variance) components. Our result shows that the with-in group variance component was 0.993 and the between-group variance component was 2.42. These variance components were used to calculate the HLM analog to ICC (1), reflecting the percentage of variance that resides between groups, which yielded a value of 0.73. An assessment of the significance of the between-group variance indicated that it was significantly different from zero [$\chi^2(48) = 52.32$, $p < 0.001$]. Thus, although a relatively small percentage of the variance in entrepreneurial intention resided between groups, it was significant and, therefore, it was useful for the analysis.

Random coefficient regression model. Having confirmed that entrepreneurial intention varied both within and between groups, we tested for the individual-level factors. Specifically, we assumed that higher individual-level factors would result in higher entrepreneurial intention. The HLM model used to test this assumption can be written in equation form as following:

Level 1: Individual level

Entrepreneurial Intention = β_{0j} +β_{1j} (Need for Achievement) + β_{2j} (Need for Independence) + β_{3j} (Risk Propensity) + β_{4j} (Self-Realization) + β_{5j} (Financial success) + β_{6j} (Social Norms) +β_{7j} (Entrepreneurial Self-Efficacy) +β_{8j} (Social Network Support) + e_{ij}

Level 2: Group level (organizational and institutional)

$\beta_{0j} = \gamma_{00} + \gamma_{01}$ (Organizational Support) + γ_{02} (Institutional Support) + u_{0j}

$\beta_{1j} = \gamma_{10} + u_{1j}$; $\beta_{2j} = \gamma_{20} + u_{2j}$; $\beta_{3j} = \gamma_{30} + u_{3j}$; $\beta_{4j} = \gamma_{40} + u_{4j}$; $\beta_{5j} = \gamma_{50} + u_{5j}$; $\beta_{6j} = \gamma_{60} + u_{6j}$; $\beta_{7j} = \gamma_{70} + u_{7j}$; $\beta_{8j} = \gamma_{80} + u_{8j}$

where γ_{i0} (i=1…8) provides a direct test of each individual-level variable. Specifically, the Level 2 slope model specifies no predictor. Thus, the actual regression equation consists of the Level 1 slopes regressed onto a unit vector, which is used to module the intercept term so, the regression parameter estimated is equal to the mean of the outcome variable. The results of this model revealed the pooled within-group slopes (γ_{i0} (i=1…8)) which are reported in Table 3. The residual from the Level 1 equation (i.e., the variance in e_{ij}) now represents the residual within-group variance.

---INSERT TABLE 3 ABOUT HERE---

Wee describe two sets of regression models—one at the individual level and the other at the organizational and institutional level. We have estimated our models based on gender categories as previous research shows a significant difference between male and females (Hsu et al., 2007). As suggested by Raudenbush and Beryk (2002), we followed all the assumptions for the two levels of analysis and estimated the variance explained at each level. The organizational and institutional-level variables accounted for 40% and 44% in the between-department variance (Model 1a and 2a), while the individual-level variables explained 55% and 60% of the variance (Model 1b and 2b) of entrepreneurial intention for females and males, respectively.

Our organizational-level and institutional-level results, adjusted for individual level factors, partially support our propositions. Our P1: perceived organizational (university) support enhances entrepreneurial intention, was partially supported. Overall, we found a positive non-significant relationship between university support and entrepreneurial intention (0.03, n.s.) However, the relationship was positive (marginally) significant for females (0.07, $p < 0.10$) and it was negative non-significant for males (-0.01, n.s.). Our P2: perceived

institutional (country) support enhances entrepreneurial intention, was partially supported. Overall we found a positive significant relationship between institutional support and entrepreneurial intention (0.06, $p < 0.05$). The relationship was positive significant for females (0.21, $p < 0.05$) and positive but non-significant for males.

The results of our individual-level factors are mixed. Regardless of gender, we found a positive, highly significant relationship for entrepreneurial intention with need for achievement ($\beta_1 = 0.62$, $p < 0.001$ for males; $\beta_1 = 0.75$, $p < 0.001$ for females) and self-realization ($\beta_4 = 0.11$, $p < 0.01$ for men; $\beta_4 = 0.11$, $p < 0.01$ for women). For males, need for independence ($\beta_2 = 0.08$, $p < 0.05$) and entrepreneurial self-efficacy ($\beta_7 = 0.13$, $p < 0.05$) were positively related to entrepreneurial intention. For females, Social Norms ($\beta_6 = 0.09$, $p < 0.01$) was positively related to entrepreneurial intention. Three variables: social network support, risk taking propensity and financial success showed no significant relationship with entrepreneurial intention in any case.

Discussion and Conclusion

Our study was based on the premise that organizational and institutional-level factors enhance university students' entrepreneurial intention, when controlling for individual-level influences. We extend the entrepreneurial intention literature by introducing a multi-level perspective to develop a broader understanding of the factors that lead to the development of new venture creation. Previous literature has suggested that individual or organizational factors alone are insufficient in their ability to explain the nature of entrepreneurial intention. Rather, it is the combination of individual, organizational and institutional factors that can provide better insights into this dynamic process. Theoretically, our study offers a new perspective in the entrepreneurial intention literature by demonstrating the combined influence of desirability and feasibility factors. Our findings support arguments from Hmieleski and Baron (2009) and Phan et al. (2009) that more multi-level research is needed in the field of entrepreneurship.

In this research we aimed to present a multi-level framework of entrepreneurial intention. At the institutional level (country), we found a positive significant relationship between perceived institutional support and entrepreneurial intention, which suggests that students in our target universities perceive that the policies, regulations and programs run by the Pakistani government create a supportive environment for entrepreneurship, although the perception of males is less positive than females. This is important, as it means that the initiatives recently taken by the Higher Education Commission of Pakistan to promote business education, particularly focusing on stimulating entrepreneurial education and culture in Pakistani universities are being well received by students in general. This finding supports previous research which argues that institutional factors are key to the development of entrepreneurs as a hostile institutional environment hinders individuals' willingness to engage in entrepreneurship activities (Luthje and Franke 2003; Schwarz et al. 2009; Turker and Selcuk, 2009).

At the organizational level (university), we found no significant relationship between perceived university support and entrepreneurial intention, which suggests that students in our target universities have not perceived strong educational, cognitive, and business development support from their universities, although for females this perception was slightly more positive. This finding is not consistent with previous research which suggested that inspiration is the most important benefit from an entrepreneurship program (Souitaris et al., 2007). An explanation for our results can be offered: First, in Pakistani universities entrepreneurship education is in the introduction stage of its life cycle and the faculties at different universities are not recognized as being entrepreneurship-oriented. Thus, a collective effort is required to boost up the young faculty and promote entrepreneurship among them. Business Schools in Pakistan need to develop a more competitive entrepreneurship-focused curriculum to prepare the business leaders of the future. This issue can also be overcome by recruiting more entrepreneurial-oriented teaching faculty, developing a strong industry network, and building links and faculty exchange programs with universities which already enjoy a strong name in

entrepreneurship education. Second, the heads of department in Pakistani universities are continuously changing, which leads to change in values and vision. Therefore, entrepreneurship courses/programs have been affected by this issue, which suggests that a clear and sustained focus is important to develop a strong entrepreneurial program.

The results of our individual-level factors show that males and females are motivated differently in their entrepreneurial intention. The main motivator for both males and females was their need for achievement, and this was stronger for women. Both were equally motivated by self-realization. However, males were found to be motivated by the need for independence and their entrepreneurial self-efficacy, while women were motivated by the need for social norms. Neither males nor females were motivated by risk taking propensity, financial success, or social network support. These differences provide an opportunity to understand the psychology underpinning entrepreneurial intention of males and females. Differential strategies at the university support level and at the institutional support level can therefore be designed to strengthen and enhance males and females' attitudes towards entrepreneurship.

In conclusion, our study makes important contributions to the entrepreneurship literature. The study fills a gap in the literature as we have developed and tested a multi-level framework for measuring entrepreneurial intention based on a combination of individual, organizational and institutional factors. Our findings and suggestion are useful to policy-makers and business schools, particularly heads of entrepreneurship programs. Finally, this study provides a useful insight into the differences regarding the individual factors that motivate males and females for differential strategies.

Limitations and Future Research

Our study is subject to some limitations. Firstly, similar to the vast majority of studies in the literature our focus is on measuring behavioral intention instead of actual behavior. Although, the predictive validity of intention has been established in a general context (Armitage and Conner 2001), it has yet to be established in the entrepreneurial context. As a consequence, our

study is unable to predict how many students will actually materialize their entrepreneurial intention. Furthermore, we made a selection of individual, organizational and institutional variables that were found to be most influential in predicting entrepreneurial intention, through our extensive literature review, but other variables not included could be also important. Thirdly, a longitudinal study could reveal a better understanding of whether entrepreneurial intention actually turns into entrepreneurial behavior. Finally, our study examines university students in Pakistani universities. Therefore, our findings are mostly generalizable to developing countries. Future research can conduct a comparative analysis between developing and advanced economies to understand relevant variations.

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Table 2. Descriptive Statistics, Correlation Matrix

	1	2	3	4	5	6	7	8	9	10	11
1. Perceived Organizational (University) Support											
2. Perceived Institutional Support	0.13**										
3. Need for Achievement	0.28**	0.15**									
4. Need for Independence	0.33**	0.20**	0.42**								
5. Risk Taking Propensity	0.25**	0.20*	0.44**	0.34**							
6. Self-Realization	0.30**	0.17**	0.45**	0.44**	0.59**						
7. Financial success	0.00	0.09*	-0.10*	0.04	-0.03	0.01					
8. Social norms	0.32**	0.17**	0.46**	0.48**	0.36**	0.44**	0.05				
9. Entrepreneurial Self-efficacy	0.42**	0.24**	0.56**	0.52**	0.43**	0.49**	0.05	0.58**			
10. Innovativeness	0.25**	0.09*	0.34**	0.29**	0.25**	0.26**	0.05	0.35**	0.40**		
11. Entrepreneur Intention	0.30**	0.16**	0.81**	0.44**	0.41**	0.48**	-0.10*	0.46**	0.55**	0.32**	
Mean	3.73	3.61	3.52	3.93	3.57	3.79	3.09	3.86	3.76	3.57	3.54
Standard Deviation	1.28	1.15	0.99	1.08	1.17	1.09	1.14	0.94	0.71	0.73	0.96

correlations between constructs. ** $p < 0.01$, * $p < 0.05$ (2-tailed)

Table 3. Reliability and Validity Results

Construct and response format[a]	Factor loading
Entrepreneurial Intention[b] *(α = 0.80; CR=0.90; AVE=0.93)*	
Have you ever seriously considered becoming an entrepreneur? (dichotomous scale of "yes/no)	0.810
I will make every effort to start and run my own firm.	0.820
I've got firm intention to start a firm someday.	0.816
Perceived Organizational (University) Support[b] *(α = 0.6; CR=0.92; AVE=0.80)*	
Educational support - My university…	
…offers elective courses on entrepreneurship.	0.812
…offers project work focused on entrepreneurship.	0.826
…offers internship focused on entrepreneurship.	0.830
…offers a bachelor or master study on entrepreneurship.	0.854
…arranges conferences /workshops on entrepreneurship.	0.621
…brings entrepreneurial students in contact with each other.	0.652
Concept development support - My university…	
…creates awareness of entrepreneur-ship as a possible career choice.	0.788
…motivates students to start a new business.	0.609
…provides students with ideas to start a new business from.	0.812
…provides students with the knowledge needed to start a new business.	0.826
Business development support - My university…	
…provide students with the financial means to start a new business.	0.854
…use its reputation to support students that start a new business.	0.621
…serve as a lead customer of students that start a new business.	0.652
Perceived Institutional Support[b] *(α = 0.80; CR=0.82; AVE=0.75)*	
In Pakistan, entrepreneurs are encouraged by a structural system including private, public, and non-governmental organizations.	0.605
Pakistani economy provides many opportunities for entrepreneurs.	0.706
Taking loans from banks is quite difficult for entrepreneurs in Pakistan®.	0.683
Pakistani state laws are averse to running a business ®.	0.589

Need for Achievement[b] *(α = 0.84; CR=0.87; AVE=0.76)*	
Hard work is something I like to avoid ®.	0.839
I believe I would enjoy having authority over other people.	0.849
I would like an important job where people would look up to me.	0.827
Need for Independence[c] *(α = 0.90; CR=0.92; AVE=0.86)*	
Get greater flexibility for personal life.	0.777
Free to adapt my approach to work.	0.614
Risk Taking Propensity[c] *(α = 0.92; CR=0.82; AVE=0.89)*	
I enjoy the excitement of uncertainty and risk.	0.683
I am willing to take significant risk if the possible rewards are high enough.	0.739
Self-Realization[c] *(α = 0.78; CR=0.84; AVE=0.805)*	
To challenge myself.	0.835
To fulfil a personal vision.	0.720
To grow and learn as a person.	0.701
Financial Success[c] *(α = 0.75; CR=0.78; AVE=0.79)*	
Earn a larger personal income.	0.948
Financial security.	0.810
Build great wealth, high income.	0.746
Social Norms[c] *(α = 0.80; CR=0.87; AVE=0.83)*	
I believe that family members who are close to me think that should be an entrepreneur.	0.825
I believe that my close friends think that I should be an entrepreneur	0.710
I believe that people who are important to me think that I should be an entrepreneur	0.706
(adapted from Autio et al., 2001 and Kennedy et al., 2003)	
Entrepreneurial Self Efficacy[d] *(α = 0.92; CR=0.90; AVE=0.89)*	0.835
26 items were used. Respondents were asked to rate their skill level in marketing, innovation, management, risk-management, and financial control.	
Innovativeness[b] (*α = 0.74; CR=0.80; AVE=0.80*)	
I often surprise people with my novel ideas.	0.832
People often ask me for help in creative activities.	0.726
I obtain more satisfaction from mastering a skill than coming up with a new idea.	0.730
I prefer work that requires original thinking.	0.654
I usually continue doing a new job in exactly the way it was taught to me.	0.721
I like a job which demands skill and practice rather than inventiveness.	0.752
I am not a very creative person.	0.521
I like to experiment with various ways of doing the same thing	0.652

a) The reported factor loadings pertain to the measurement model in which the five factors are simultaneously included. To assess the constructs' validity further, we also undertake confirmatory factor analysis on each of the constructs individually and find that all factor loadings are higher than .40.

(b) 5-point Likert Scale (1) strongly disagree (5) strongly agree; **(c)** 5-point Likert Scale (1) to no extent (5) to a very great extent; **(d)** 5-point Likert scale (1) = None, (2) = Basic, (3) = Competent, (4) = Advanced, (5) = Expert

Table 4.

Results for OLS Regression for Perceive desirability and Perceive feasibility effect on self-employment Intention

	β	β	β
(Constant)	3.621**(.264)	2.018*(.26)	2.263*(.32)
Gender	-.274**(.092)	-.197**(.070)	-.199**(.069)
Age	-.030(.084)	-.021(.069)	-.021(.070)
Education	.009(.042)	.011(.035)	.012(.035)
Experience	.012(.096)	-.015(.079)	-.015(.079)
Study discipline	.106**(.054)	.102**(.044)	.102**(.044)
Perceive desirability		.801**(.069)	.873**(.25)
Perceive feasibility		.169**(.070)	.241*(.25)
Perceive desirability x Perceive feasibility			-.021*(.069)
F-statistics	3.052**	45.041**	46.0
Adjusted R^2	.025	.338	.36
Change in R^2	0.00	.313	.020

Table 5. Results for HLM Analysis for Students' Entrepreneurial Intention

Variables	Parameter Estimates											
	Overall				Male				Female			
	Model 1		Model 2		Model 1a		Model 2a		Model 1b		Model 2b	
Organizational and Institutional Level	β	SE	β	SE	β	SE	β	SE	β	SE	β	SE
Perceived Organizational (University) Support (γ_1)			0.03	0.02			-0.01	0.03			0.07†	0.03
Perceived Institutional Support (γ_2)			0.06*	0.02			0.06	0.04			0.21*	0.04
Individual Level Factors												
Need for Achievement (β_1)	0.69***	0.03	0.69***	0.03	0.62***	0.04	0.617***	0.04	0.75***	0.05	0.75***	0.05
Need for Independence (β_2)	0.06*	0.25	0.05*	0.03	0.08*	0.03	0.08*	0.03	0.03	0.05	0.02	0.05
Risk Taking Propensity (β_3)	-0.02	0.02	-0.02	0.02	0.00	0.03	0.00	0.03	-0.56	0.04	-0.05	0.05
Self-Realization (β_4)	0.10***	0.03	0.11***	0.03	0.11**	0.03	0.11**	0.03	0.12**	0.05	0.11*	0.05
Financial Success (β_5)	-0.04	0.02	-0.04	0.02	-0.04	0.02	-0.04	0.02	-0.03	0.04	-0.03	0.04
Social Norms (β_6)	0.05†	0.03	0.05	0.03	0.03	0.04	0.03	0.04	0.09*	0.06	0.09**	0.06
Entrepreneurial Self-Efficacy (β_7)	0.08 †	0.04	0.07	0.05	0.10*	0.06	0.13*	0.06	0.01	0.08	0.00	0.09
Innovativeness (β_8)	0.00	0.00	0.00	0.03	0.01	0.04	0.01	0.04	-0.02	0.06	-0.022	0.06

† $p < 0.10$
* $p < 0.05$
** $p < 0.01$
*** $p < 0.001$

Appendix I **(need to be updated by saadat)**

Determinants of Entrepreneurial Intentions among students (2000-2012)

	Year	Authors	Journal	Sample	Individual Factors	Org. Factors	Instituitional Fcators
1.	2012	Laspita et al.	*J of Buss. Venturing*	43,764 - university Students	X		
2.	2012	Åstebro et al.	*Research Policy*	University graduates	X	X	
3.	2012	Díaz-Casero et al.	Int'l Entrep Management J	1043-University students	X		
4.	2011	Zellweger et al.	*J of Buss. Venturing*	5363 - Students	X		
5.	2011	Wang & Verzat	*J of Small Buss. & Enterprise Develp.*	12 interviews - Engineering students	X	X	
6.	2011	Zarafshani & Rajabi	*Int'l J of* Mgmt.	280 - Entrepreneurship course students	X		
7.	2011	Jones et al.	*Education + Training*	122 - *Buss.* related students	X		
8.	2011	Davey et al.	*Education + Training*	1055 – Students	X	X	
9.	2011	Ertuna & Gurel	*Education + Training*	767 - Mgmt. & Engineering students	X		
10.	2011	Sandhu at al.	*Int'l J of Entrepreneurial Beh. & Research*	267 - *Buss.* Mgmt. & other courses PG students	X		
11.	2011	Lakovleva et al.	*Education + Training*	2225 - *Buss.* related (79%)& non *Buss.* related	X		
12.	2011	Keat et al.	*Int'l J of Buss. & Social Science*	417 - UG students	X	X	
13.	2011	Chuluunbaatar et al.	*Asian Academy of* Mgmt. *J*	361 - MBA students	X		
14.	2011	Fatoki & Chindoga	*Int'l Buss. Research*	357 - Undergrad & grad	X		
15.	2011	Fitzsimmons & Dolas	*J of Buss. Venturing*	414 - MBA students	X		
16.	2011	Gelard & Saleh	*African J of Buss.* Mgmt.	200 - Accounting-Mgmt. Students	X	X	X
17.	2011	Ahmetoglu et al.	*Personality & Individual Differences*	528 - General population & Students	X		
18.	2011	Brück et al.	*European J of Political Economy*	12000 - General Population	X		
19.	2011	Byabashaija & Katono	*J of Develop. Entrepreneurship*	167 - University students	X	X	
20.	2011	Moi et al.	Journal of Arts, Science & Commerce	787-University students	X	X	
21.	2011	Klyver & Schøtt	Journal of Global Entrepreneurship Research	2001-genral population	X		
22.	2010	BarNir et al.	*J of Applied Social Psychology*	393 - UG students	X		
23.	2010	Moriano et al.	*J of Career Development*	1074 - Psychology (37%), *Buss.* (42) other	X		
24.	2010	Engle et al.	*Int'l J of Entrepreneurial Beh. &Research*	1748 - *Buss.* Students	X		
25.	2010	Nabi et al.	*J of Small Buss. & Enterprise Development*	8000 – students	X		
26.	2010	Carey et al.	*J of Develop. Entrepreneurship*	169 – students	X		
27.	2010	Yordanova & Tarrazon	*J of Develop. Entrepreneurship*	366 - Economics or *Buss.* Administration	X		
28.	2010	Millman et al.	*J of Small Buss. & Enterprise Development*	303 - General students	X		
29.	2010	Franco et al.	*Education + Training*	988 – UG & PG students	X	X	
30.	2010	Giacomin et al.	*Int'l Entrepreneurship and Management J*	2093 - UG & PG	X		X
31.	2010	Drost Ellen A.	*Advances In* Mgmt.	168 - UG *Buss.* students	X	X	
32.	2010	Aghazamani & Roozikhah	*European J of Social Sciences*	125	X		
33.	2010	Teixeira & Davey	*Industry and Higher Education*	4413	X		
34.	2009	Nasurdin et al.	*European J of Scientific Research*	237 - General youth	X		
35.	2009	Liñán & Chen	*Entrepreneurship Theory & Practice*	387 - *Buss.*, Economics & engineering	X		

36.	2009	Turker & Selcuk	*J of European Industrial Training*	300 – students	X	X	X
37.	2009	Wilson et al.	*J of Develop. Entrepreneurship*	4292 - MBA Students, Middle/High School	X	X	
38.	2009	Gupta et al.	*Entrepreneurship Theory & Practice*	277 - *Buss.* Students	X		
39.	2009	Pruett et al.	*Int'l J of Entrepreneurial Beh. Research*	General students	X		
40.	2009	Rosti & Chelli	*Education + Training*	National Statistical Office database	X		
41.	2009	Cheng et al.	*Education + Training*	300 – PG students	X	X	
42.	2009	Schwarz et al.	*Education + Training*	2124 - Students	X	X	
43.	2009	Zampetakis et al.	*Int'l J of Entrepreneurial Beh. &Research*	280 - *Buss.*, engineering & science students	X		
44.	2009	Kickul et al.	*Entrepreneurship Theory & Practice*	138 - MBA students	X		
45.	2009	Ismail et al.	*Int'l J of Buss. &* Mgmt.	123 - UG students	X		
46.	2008	Linan, F.	*Int'l Entrepreneurship &* Mgmt. *J*	702 -UG students	X		
47.	2008	Wu & Wu	*J of Small Buss. &Enterprise Development*	150 – students	X	X	
48.	2008	Mueller & Dato-On	*J of Develop. Entrepreneurship*	216 - MBA students	X		
49.	2008	van Gelderen et al.	*Career Development Int'l*	1301 - *Buss.* Students	X		
50.	2008	Gurbuz & Aykol	*J of Global Strategic* Mgmt.	324 - Economics, administrative & engineering	X	X	
51.	2008	Basu & Virick.	*Annual Meeting of the National Collegiate Inventors*	124 - University students	X	X	
52.	2008	Jones et al.	*Education þ Training*	122 - Specialized course students	X		
53.	2008	Radu & Loué	*J of Enterprising Culture*	44 UG students	X		
54.	2008	Gerry et al.	Problems and Perspectives in Management	640-Undergraduate students	X	X	
55.	2008	Hamidi et al.	J of Small Buss. & Enterprise Development	78- Entrepreneurship course students	X		
56.	2007	Carr & Sequeira	*J of Buss. Research*	308 - General population	X		
57.	2007	Wilson et al.	*Entrepreneurship Theory & Practice*	933 - MBA Students, 4292 - High School	X	X	
58.	2007	Sequeira et al.	*J of Develop. Entrepreneurship*	389 – Organizations students	X		
59.	2007	Liñán & Santos	*Career Development Int'l*	354 - Economics & Mgmt. students	X		
60.	2007	Pillis & Reardon	*Career Development Int'l*	208 - UG & MBA students	X		
61.	2007	Souitaris. et al.	*J of Buss. Venturing*	science & engineering students	X		
62.	2007	Li	*J of Develop. Entrepreneurship*	364 – students	X		X
63.	2007	Frank et al.	*Entrepreneurship & Regional Development*	417 - High school, 777 - university, 314 - founders of *Buss.* & 746 -successors	X	X	
64.	2006	Urban	*J of Develop. Entrepreneurship*	150 - MBA students	X		
65.	2006	van Auken at al.	*Entrepreneurship Theory & Practice*	82 - General students	X		
66.	2006	Gurol & Atsan	*Education + Training*	400 - *Buss.* UG	X		
67.	2006	Klapper & Le´ger-Jarniou	*Industry and HigherEducation*	538 - *Buss.* & engg. UG	X	X	
68.	2006	Levenburg et al.	*Journal of Education for Business*	728 UG students	X		
69.	2005	Zhao et al.	*J of Applied Psychology*	265 - MBA Students	X		
70.	2005	Segal et al.	*Int'l J of Entrepreneurial Beh. & Research*	114 - UG *Buss.* students	X		
71.	2005	Veciana et al.	Int'lEntrepreneurship and Management J	1272 - Buss. & Engineering UG & PG	X		
72.	2005	Fitzsimmons, and Douglas	Babson-Kauffman conf.	414-University students	X		

73.	2005	Fitzsimmons, and Douglas	AGSE Entrepreneurship Exchange	90-MBA students	X			
74.	2004	Kristiansen & Indarti	*J of Enterprising Culture*	251 - *Buss.* & Economics students	X			X
75.	2004	Wang & Wong	*Technovation*	5326 – students	X			
76.	2004	Franke & Lüthje	*Int'l J of Innovation & Technology* Mgmt.	1313 - *Buss.* Students	X			
77.	2003	Peterman & Kennedy	*Entrepreneurship Theory & Practice*	220 - Specialized program students	X	X		
78.	2003	Luthje & Franke	*R&D* Mgmt.	512-University students	X			X
79.	2003	Lena & Wong	Journal of Enterprising Culture	11660 - *Buss.* UG	X			
80.	2003	Carter et al.	J of Buss. Venturing	3126- General population	X			
81.	2002	Drnovsek & Glas	J of Buss. Venturing	302 - MBA students & innovators	X			
82.	2002	Oakey et al.	Int'l J of Entrepreneurship and Innovation Mgmt.	247 - UG & PG students	X			
83.	2002	Douglas and Shepherd	Entrepreneurial Theory and Practice	300-Alumni students	X			
84.	2000	Krueger et al.	*J of Buss. Venturing*	97 - *Buss.* Students	X			
85.	2000	Mueller & Thomas	*J of Buss. Venturing*	1800 - UG *Buss.* students	*X*			

Note: Refernce can be obtained from the authors through email.

Appendix II
Entrepreneurship Studies by Country

Europe	Asia	Africa	America	Australia & New Zealand
Switzerland	Bangladesh	Egypt	Brazil	New Zealand (2)
Austria (5)	China (8)	Ghana	Canada (2)	Australia (5)
Belgium (2)	India (5)	South Africa (3)	Costa Rica	
Bulgaria	Indonesia (2)	Uganda (2)	Mexico (2)	
Croatia	Iran (4)	Kenya	Puerto Rico	
Czech Republic (3)	Malaysia (7)		USA (23)	
France (7)	Singapore (2)			
Finland (5)	Turkey (6)			
Germany (9)	Taiwan (2)			
Hungary (2)	Thailand (2)			
Greece (2)				
Ireland (4)				
Italy				
Portugal (5)				
Poland (3)				
Russia (2)				
Slovenia (2)				
Spain (10)				
Sweden (3)				
Nederland (3)				
Norway (3)				
Romania				
Ukraine				
United Kingdom (5)				

Appendix III
Entrepreneurship Studies by Individual factors

Individual Levels	Studies (Refer to appendix I)
Need for Achievement	9, 32, 74
Need for Independence	76, 63
Risk Taking Propensity	9, 10, 32, 54, 55, 69, 70, 72, 75, 76, 78, 83
Self-Realization	80, 50
Financial success	55, 49, 63,80
Social Norms	80, 84, 34, 35, 62
Entrepreneurial Self-efficacy	22, 23, 31, 37, 44, 48, 49, 53, 56, 57, 58, 69, 70, 72, 74, 81, 84
Relational Support	10, 13, 28, 29, 34, 50, 58, 63, 74